

# इंटरनेट

# मानक

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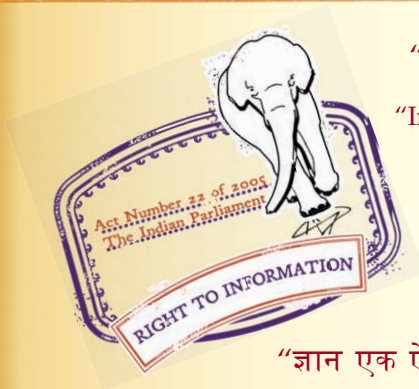
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IS 665 (1989): Textiles - Determination of dimensional changes of fabrics containing wool on soaking in water [TXD 5: Chemical Methods of Test]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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*Indian Standard*

**TEXTILES — DETERMINATION OF  
DIMENSIONAL CHANGES OF FABRICS  
CONTAINING WOOL ON SOAKING IN WATER**

*( First Revision )*

**भारतीय मानक**

**वस्त्रादि — पानी में भिगोने पर ऊनयुक्त वस्त्रों का परिमाणात्मक परिवर्तन ज्ञात करना**

**( प्रथम पुनरीक्षण )**

First Reprint OCTOBER 1996

UDC 677·31·074 : 677·014·635·2

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**BUREAU OF INDIAN STANDARDS**  
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## FOREWORD

This Indian Standard ( First Revision ) was adopted by the Bureau of Indian Standards on 15 May 1989, after the draft finalized by the Chemical Methods of Test Sectional Committee had been approved by the Textile Division Council.

This standard was first published in 1962 and has been revised to make it up to date on the basis of experience gained during its use. In this revision, the following changes have been carried out:

- a) The title and scope have been modified to cover woven and knitted textile fabrics of all kinds except those containing less than 50 percent wool;
- b) Sampling, preparation of test specimens, apparatus and test procedure has been modified; and
- c) Use of an efficient wetting agent has been specified for thorough soaking of the specimens.

On soaking with water, fabrics containing wool shrink due to the relaxation of strains to which they are subjected during their manufacture. Appreciable shrinkage also takes place during drying of the wet fabrics. As fabrics containing wool are quite often exposed to rain or humid atmosphere, their shrinkage behaviour is of obvious interest to the consumer.

In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values ( revised )'.

## *Indian Standard*

# TEXTILES — DETERMINATION OF DIMENSIONAL CHANGES OF FABRICS CONTAINING WOOL ON SOAKING IN WATER

( *First Revision* )

### 1 SCOPE

1.1 This standard prescribes a method for determination of dimensional changes of all woven and knitted fabrics containing more than 50 percent wool when wetted out without agitation and dried. The test is applicable to fully finished fabrics.

### 2 REFERENCES

2.1 The following Indian Standards are necessary adjuncts to this standard:

| <i>IS No.</i>   | <i>Title</i>                                                                                                                     |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------|
| IS 1070 : 1977  | Specification for water for general laboratory use ( <i>second revision</i> )                                                    |
| IS 6359 : 1971  | Method for conditioning of textiles                                                                                              |
| IS 10099 : 1982 | Methods for preparation, marking and measuring of fabric specimens and garments in tests for determination of dimensional change |

### 3 PRINCIPLE

3.1 The specimen, after conditioning, is measured, soaked, dried under prescribed conditions, reconditioned and remeasured. The dimensional changes obtained are calculated from the means of the original and final dimensions in the lengthwise and/or widthwise directions.

### 4 TERMINOLOGY

4.0 For the purpose of this standard, the following definition shall apply.

#### 4.1 Dimensional Change, Percent

The decrease or increase in dimensions ( that is, in length or width or both ) after subjecting the fabric to the prescribed test, expressed as a percentage of the corresponding dimensions before such test.

### 5 SAMPLING

5.1 Sample from the lot shall be drawn so as to be representative of the lot. Sample drawn in

accordance with the relevant material specification or as agreed to between the buyer and the seller shall be held to be representative of the lot.

### 6 APPARATUS

#### 6.1 Watertight Tray or Container

It shall be approximately 100 mm deep and of sufficient area to contain the specimen horizontally without folding. It shall be provided with a glass plate for covering and with suitable draining arrangement.

#### 6.2 Steel Rule, graduated in millimetres.

6.3 Means of Marking Reference Point, as specified in 5.3 of IS 10099 : 1982.

6.4 Flat Horizontal Surface, at least 100 mm longer than the specimen in each direction.

6.5 Trays, with mesh of approximately 10 mm, on which specimens are dried and conditioned.

### 7 REAGENTS

#### 7.1 Quality of Reagents

Unless otherwise specified, pure chemicals and distilled water ( *see* IS 1070 : 1977 ) shall be used wherever the use of water as a reagent is intended.

NOTE — 'Pure chemicals', shall mean chemicals that do not contain impurities which affect the test results.

7.2 Sodium Hexametaphosphate, commercially available as 'Calgon'.

7.3 An Efficient Wetting Agent, for example, sodium dioctyl sulpho-succinate or dodecyl benzene sodium sulphonate.

### 8 ATMOSPHERE FOR CONDITIONING AND TESTING

8.1 Prior to test, the test specimens shall be conditioned to moisture equilibrium from the dry side in a standard atmosphere at  $65 \pm 2$  percent relative humidity and  $27 \pm 2^\circ\text{C}$  temperature ( *see* IS 6359 : 1971 ).

8.2 When the test specimens have been left in such an atmosphere for 24 hours in such a way as to expose, as far as possible, all portions of the

specimen to the atmosphere, they shall be deemed to have reached moisture equilibrium. However, case of fabrics which weigh more than 270 g/m<sup>2</sup>, this period shall be 48 hours.

NOTE — It is preferable to store the newly finished fabrics for about a week before conditioning.

**8.3** The testing shall be carried out in the standard atmosphere ( *see* 8.2 ).

## 9 TEST SPECIMENS

**9.1** Draw at least one test specimen from each piece of wide fabrics measuring not less than 500 × 500 mm with edges parallel to the length and width of the fabric and at least three specimens from each piece of narrow fabrics measuring 500 mm in length and of full width. Do not take any specimen within 1 m of either end of the piece. In case of wide fabrics, do not take specimens with selvages. For knitted fabrics, make up the specimens in double thickness, sewing the free edges together with dimensionally stable thread. When fabrics with fancy weave structures are being tested, ensure as far as possible that exact number of repeats are taken in each test specimen.

NOTE — The specimen should be cut and not torn from the fabric.

## 10 PROCEDURE

**10.1** Mark on each specimen pairs of reference points as prescribed in IS 10099 : 1982. Lay the marked specimens without tension on the mesh tray and expose it to the standard atmosphere for conditioning ( *see* 8.2 ) at least for 24 hours to reach moisture equilibrium. Determine the mass of the specimen. Lay the conditioned specimen without stretching on the flat surface and measure and record the distance between the corresponding reference points to the nearest millimetre.

**10.2** Soak the measured specimen laid flat for 1 hour at 35 to 37°C in water, to which has been added 0.5 g/l of an efficient wetting agent ( calculated on active matter content ).

NOTE — The water should be of zero hardness or of not more than 50 ppm of calcium carbonate hardness to which sodium hexametaphosphate has been added at the rate of 0.08 g/l per 10 ppm of calcium carbonate. Ensure that the depth of liquid above the specimen is at least 25 mm. If necessary, keep the specimen submerged, for example, by use of small weight-pieces, ensuring that these are as small as possible.

**10.3** After one hour, pour off the liquid and remove the specimen, without distortion, from the tray or container and place it flat on a towel.

In this process, handle the specimen with care. The most convenient method is to fold over the edge to the centre so that the whole specimen is supported when lifted on to the towel. Remove excess moisture by lightly pressing another towel on top of the specimen.

**10.4** Lay the specimen flat on the mesh tray, dry it at room temperature and condition it to within 5 percent of its original mass in the standard atmosphere ( *see* 8.2 ), taking care to condition from the wet side. Lay the dried, conditioned specimen on the flat surface and remeasure and record the distances between corresponding reference points, to the nearest millimetre.

**10.5** Repeat the procedure from 10.1 to 10.4 with the remaining test specimens.

## 11 CALCULATION AND EXPRESSION OF RESULTS

**11.1** Calculate the mean of the original dimensions and the mean of the final dimensions for each test specimen in each direction separately to the nearest millimetre. Calculate separately the percentage dimensional change for each specimen in each direction ( lengthways and widthways ) by the formula:

$$\text{Dimensional change, percent} = \frac{100 ( b - a )}{a}$$

where

$a$  = mean original dimension before treatment for each test specimen; and

$b$  = mean final dimension after treatment for each test specimen.

**11.2** Calculate the mean of dimensional changes of all the specimens separately in each direction.

**11.3** Express the mean dimensional change, percent in each direction to the nearest 0.25 percent.

## 12 REPORT

**12.1** The report shall include the following information:

- a) Whether the specimens were from wide or narrow fabrics and the number of specimens tested from each piece in the test sample;
- b) Mean dimensional change, percent in the lengthways and widthways directions for wide fabrics, and in the lengthways direction for narrow fabrics; and
- c) Indicate a decrease in dimension by a minus sign and an increase by a plus sign.

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This Indian Standard has been developed from Doc: No. TDC 5 ( 2497 )

### Amendments Issued Since Publication

| Amend No. | Date of Issue | Text Affected |
|-----------|---------------|---------------|
|           |               |               |
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